REMARKS

Claims 1–18 are pending in the present application.

The specification was amended to correct errors therein. No new matter has been added.

A sketch showing proposed drawing changes in red ink is attached hereto.

Reconsideration of the claims is respectfully requested.

37 C.F.R. § 1.84(p) (Drawings)

The drawings were objected to under 37 C.F.R. §§ 1.84(p)(4)–(5) as containing reference

characters used for multiple elements or not mentioned in the specification. This objection is

respectfully traversed.

The specification and drawings have been amended herein to correct the errors identified in

the Office Action.

Accordingly, the objection to the drawings under 37 C.F.R. §§ 1.84(p) has been overcome.

35 U.S.C. § 103 (Obviousness)

Claims 1 and 10 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S.

Patent No. 6,643,321 to *Genossar et al* in view of U.S. Patent No. 5,991,308 to *Fuhrmann et al.*

Claims 2–3 and 11–12 were rejected under 35 U.S.C. § 103(a) as being unpatentable over *Genossar*

et al in view of *Fuhrmann et al* and further in view of U.S. Patent No. 5,815,529 to *Wang*. Claims

4 and 13 were rejected under 35 U.S.C. § 103(a) as being unpatentable over *Genossar et al* in view

of *Fuhrmann et al* and further in view of U.S. Patent No. 5,835,526 to *Juntti*. Claims 5–6 and 14–15

were rejected under 35 U.S.C. § 103(a) as being unpatentable over *Genossar et al* in view of *Fuhrmann et al.* Claims 7–8 and 16–17 were rejected under 35 U.S.C. § 103(a) as being unpatentable over *Genossar et al* in view of *Fuhrmann et al* and further in view of U.S. Patent No. 6,661,857 to *Webster et al.* Claims 9 and 18 were rejected under 35 U.S.C. § 103(a) as being unpatentable over *Genossar et al* in view of *Fuhrmann et al* and further in view of U.S. Patent No. 6,650,624 to *Quigley et al.* These rejections are respectfully traversed.

In *ex parte* examination of patent applications, the Patent Office bears the burden of establishing a *prima facie* case of obviousness. MPEP § 2142, p. 2100-128 (8th ed. rev. 2 May 2004). Absent such a *prima facie* case, the applicant is under no obligation to produce evidence of nonobviousness. *Id.*

To establish a *prima facie* case of obviousness, three basic criteria must be met: First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *Id.*

Independent claims 1 and 10 each recite first and second frequency domain feedforward equalization filters producing first and second symbol estimates from in-phase (I) and quadrature-

phase (Q) signals, respectively. Such a feature is not found in the cited references, taken alone or in combination. Equalizer 54 in *Genossar et al* is a <u>time-domain</u> equalizer, not a frequency-domain equalizer. Moreover, *Genossar et al* suggests that equalizer 54 could optionally be a decision <u>feedback</u> equalizer (DFE), not a feedforward equalizer. Nothing in either reference suggests that a frequency-domain, feedforward equalizer could be simply substituted for the time-domain, feedback equalizer of *Genossar et al* as suggested in the Office Action, or provides a reasonable expectation of success in making such a substitution.

Independent claims 1 and 10 also each recite an adder producing a combined symbol estimate from the first and second signal estimate sequences. Such a feature is not found in the cited references, taken alone or in combination. The system of *Genossar et al* does not add symbol estimates produced separately from in-phase and quadrature-phase signals, but instead directly demodulates and decodes the signals, using the two signals to determine the correct phase offset. Adder 925 in *Fuhrmann et al* adds the outputs of a feedforward equalizer 921 and a decision feedback equalizer 929, not two feedforward equalizers.

Independent claims 1 and 10 recite a slicer receiving and quantizing the combined symbol estimate sequence from the adder to produce a sequence of decided symbols. Such a feature is not found in the cited references, taken alone or in combination. Neither *Genossar et al* nor *Furhmann et al* teach quantizing a combined signal estimate produced from two signal estimates derived separately from in-phase and quadrature-phase signals to produce a sequence of decide symbols.

Independent claims 1 and 10 still further recite that the adder receives a symbol correction sequence generated by a time domain feedback filter operating on the sequence of decided symbols. Such a feature is not found in the cited references, taken alone or in combination. *Genossar et al* does not disclose a feedback filter operating on a sequence of decided symbols, or an adder receiving three inputs. Decision feedback equalizer 929 in *Furhmann et al* is a frequency-domain feedback filter, not a time-domain feedback filter. Moreover, *Furhmann et al* does not disclose a feedback filter operating on a sequence of decided symbols, nor an adder receiving three inputs.

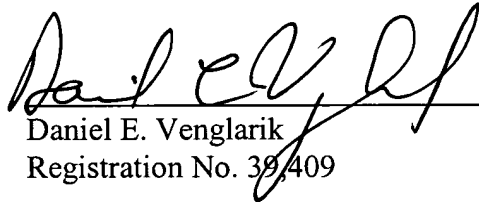Therefore, the rejection of claims 1–18 under 35 U.S.C. § 103 has been overcome.

If any issues arise, or if the Examiner has any suggestions for expediting allowance of this Application, the Applicant respectfully invites the Examiner to contact the undersigned at the telephone number indicated below or at *dvenglarik@davismunck.com*.

The Commissioner is hereby authorized to charge any additional fees connected with this communication or credit any overpayment to Deposit Account No. 50-0208.

Respectfully submitted,

DAVIS MUNCK, P.C.

Date: _10-7-04_

Daniel E. Venglarik
Registration No. 39,409

P.O. Drawer 800889
Dallas, Texas 75380
(972) 628-3621 (direct dial)
(972) 628-3600 (main number)
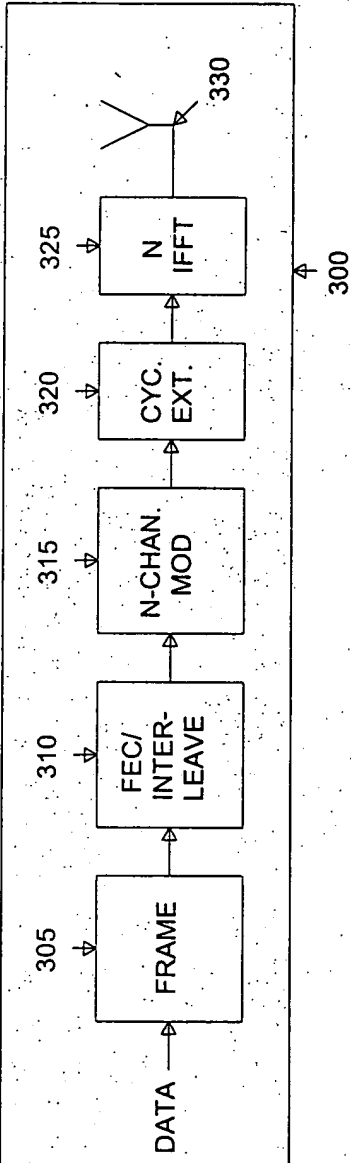(972) 628-3616 (fax)
E-mail: *dvenglarik@davismunck.com*
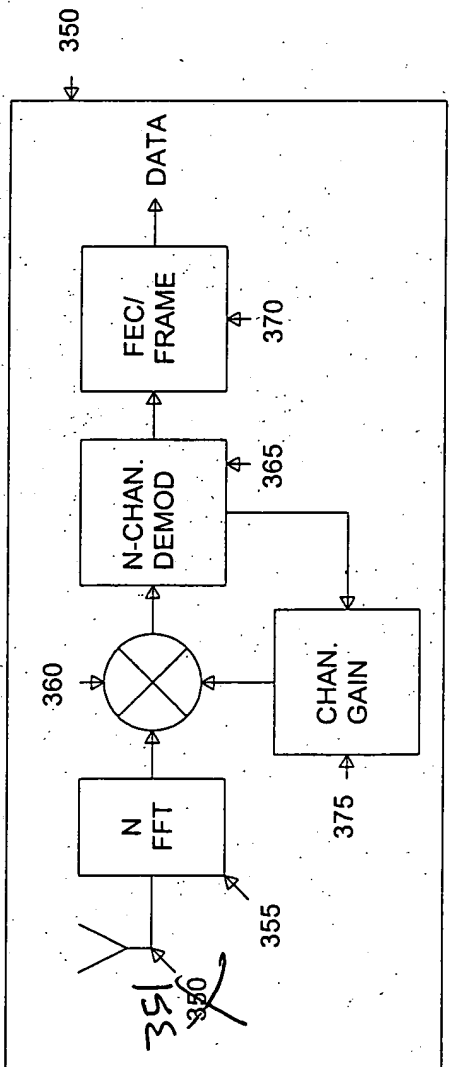
FIGURE 3A
(PRIOR ART)

DATA → | FRAME | → | FEC/INTER-LEAVE | → | N-CHAN. MOD | → | CYC. EXT. | → | N IFFT | → 330

305   310   315   320   325

300

FIGURE 3B
(PRIOR ART)

350

N FFT → ⊗ → N-CHAN. DEMOD → FEC/FRAME → DATA

355   360   365   370

CHAN. GAIN   375

350
351